

2. Policies and Required Considerations in the Pavement Design Process

- 2.1. General Policy (GP) Statements
- 2.2. Policy on Selecting the Correct AKFPD Design Procedure
- 2.3. Policy on Base Course Stabilization

2.1. General Policy (GP) Statements

- GP-1* Prepare a pavement design analysis for all highway projects requiring pavement construction, reconstruction, resurfacing, or rehabilitation. (See Section 2.2.4 for non-highway designs)
- GP-2* The pavement design method presented in this manual is the standard for flexible highway pavement designs for the Alaska DOT&PF.
- GP-3* The regional preconstruction engineer is responsible for the final pavement design. Alternate design methods may be approved by the preconstruction engineer provided rigorous analysis and hard data support those designs.
- GP-4* Design pavement structures such that no seasonal load restrictions are needed.
- GP-5, GP-6 and GP-7* refer to construction, reconstruction and rehabilitation projects.
- GP-5* For projects with design average annual daily traffic (AADTs) volumes $\geq 10,000$ without curb and gutter:
- Use Alaska Renewable Pavement (see Section 7.4.3).
 - Use a 15-year design life for both the fatigue failure criterion and the functional failure criterion (see Section 4.3.2).
- GP-6* For projects with AADTs $< 10,000$ without curb and gutter and for projects with AADTs $< 5,000$ with curb and gutter:
- Use no less than one layer of binder course, asphalt-treated base, or other stabilized base (see Section 7.4).
 - Use a 15-year design life for both the fatigue failure criterion and the functional failure criterion (see Section 4.3.2).
- GP-7* For projects with AADTs $> 5,000$ with curb and gutter:
- Use Alaska Renewable Pavement (see Section 7.4.3).
 - Use a 30-year design life for the fatigue failure, (TAI equation, see Section 4.3.2).
 - Use a 15-year analysis period for the functional failure analysis (Per Ullidtz equation, see Section 4.3.2).
- GP-8* The minimum design life of resurfacing projects using the Alaska Renewable Pavement will be not less than 15 years for both fatigue life and functional failure.
- GP-9* Surface treatments may be used if any of the following conditions are met:
- AADT < 1000 .
 - Life-cycle cost analysis supports their use.
 - Unstable foundations underlie more than 60% of the project.
 - Project falls under the *Gravel to Pavement* program.
 - Approved by the preconstruction engineer.

- GP-10* Use 2.0 inches as the minimum thickness of asphalt concrete for new pavement designs or pavement designs that involve complete replacement of the old asphalt concrete layer.
- GP-11* Use 2.0 inches as the minimum thickness of new asphalt concrete overlay placed on an existing layer of asphalt concrete, or two times the maximum aggregate size, whichever is greater.
- GP-12* Designs utilizing the AKFPD software will be performed by personnel (DOT&PF staff or consultant) trained in its use.
- GP-13* In case of reconstruction or resurfacing of a paved roadway, consider recycling or reuse of the existing asphalt concrete material in the new structure.

2.2. Policy on Selecting the Correct AKFPD Design Procedure

2.2.1 For Designing New Highway Pavements with ESALs < 1.0 Million

The excess fines method **may be used** for designing flexible highway pavement structures if:

1. The flexible surfacing material is composed of a standard form of asphalt concrete (no inclusions of unusual aggregate types or modified asphalt cements), and
2. The P_{200} content of all non-surfacing materials within the pavement structure falls within limits allowable by the excess fines design method.

The mechanistic method **may be used** for design work or for checking excess fines designs if the project's available materials meet criteria 1 and 2 listed above.

The mechanistic method **must be used** if the project's available materials do not meet criteria 1 and 2 listed above, or if the pavement structure incorporates one or more stabilized base course layers.

2.2.2. For Designing New Highway Pavements with ESALs > 1.0 Million

Use the mechanistic method.

2.2.3. For Designing Overlays of Existing Highway Pavements

Use the mechanistic method.

1. Do not overlay existing pavements if more than 80% of fatigue life of the existing pavement is exhausted (the AKFPD program determines this mechanistically based on historical traffic).
2. Do not overlay extensively cracked pavements, typically 20% or more of the surface cracked. Assume that all cracks in the existing pavement will reappear in the overlay within two years after the overlay is placed.

2.2.4. For Non-Highway Pavement Designs

Either the excess fines or mechanistic method may be used for designing flexible non-highway pavement structures, regardless of design vehicle type and/or available materials. These types of pavement structures can include asphalt sidewalks, paths and parking/staging areas.

2.3. Policy on Base Course Stabilization

It is the Department's policy to use bound stabilized bases on all roadway construction, reconstruction and rehabilitation projects.

In developing flexible pavement designs incorporating stabilized bases, refer to policies GP5, 6 and 7 in Section 2.1. In addition use the following:

1. *Alaska Soil Stabilization Design Guide*, Report No. FHWA-AK-RD-01-6B;
2. The mechanistic design method used in the AKFPD computer program; and

3. The definition of stabilized layers as found in Section 7.4.1 of this manual.

Exceptions to this policy are as follows:

1. Projects designed under the *Gravel to Pavement* Program
2. Projects exempted in writing by the regional preconstruction engineer. Rationale for an exemption may include:
 - Projects with a low AADT
 - Areas underlain by unstable foundations such as ice-rich permafrost, where settlement results in frequent maintenance
 - Projects for which a stabilized base will not provide a cost-effective improvement in the pavement performance, reduced maintenance, or reduced future rehabilitation costs through a comprehensive life-cycle cost analysis. The period of the life-cycle cost analysis shall be 30 years.
 - Roadways designed on behalf of agencies other than DOT&PF.

